

ABSTRACT

The present invention is directed to polypeptides and peptides containing at least three amino acids randomly joined in a linear array; wherein at least one of the three amino acids is an aromatic amino acid, at least one of the three amino acids is a charged amino acid and at least one amino acid is an aliphatic amino acid. In a preferred embodiment the polypeptide contains three or four of the following amino acids: tyrosine, alanine, glutamic acid or lysine. According to the present invention, the present polypeptides bind to antigen presenting cells, purified human lymphocyte antigens (HLA) and/or Copolymer 1-specific T cells. Moreover, according to the present invention, these polypeptides can be formulated into pharmaceutical compositions for treating autoimmune disease. The present invention further contemplates methods of treating an autoimmune disease in a mammal by administering a pharmaceutically effective amount of any one the present polypeptides or peptides to the mammal.